In the Matter of)	
)	
Proposed Amendments to the Service Rules)	PS Docket No. 13-87
Governing Public Safety Narrowband Operations in)	
the 769-775/799-805 MHz Bands)	
)	
National Public Safety Telecommunications)	RM-11433
Council Petition for Rulemaking on Aircraft Voice)	
Operations at 700 MHz)	
)	
National Public Safety Telecommunications)	RM-11433
Council Petition for Rulemaking to Revise 700)	
MHz Narrowband Channel Plan)	
)	
Region 24 700 MHz Regional Planning Committee)	WT Docket No. 96-86
Petition for Rulemaking)	PS Docket No. 06-229
)	
State of Louisiana Petition for Rulemaking)	RM-11577

COMMENTS OF THE PROJECT 25 COMPLIANCE ASSESSMENT PROGRAM ADVISORY PANEL[1]

The Project 25 (P25) Compliance Assessment Program Advisory Panel (CAP AP) submits the

following comments in response to the Commission's Notice of Proposed Rulemaking (Notice) in the

above-captioned proceedings.[2]

The P25 CAP AP is an advisory panel formed by the Department of Homeland Security (DHS)

Office of Interoperability and Compatibility (OIC) within the Science and Technology Directorate of the

US Department of Homeland Security to help establish standards among digital two-way land mobile

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[1] The FCC member of the P25 Compliance Assessment Program Advisory Panel did not participate in
Panel deliberations or otherwise with respect to these viewpoints or comments filed with the
Commission.

[2] Proposed Amendments to the Service Rules Governing Public Safety Narrowband Operations in the 769-775/799-
805 MHz Bands, Order on Reconsideration and Further Notice of Proposed Rulemaking, FCC 16-111 (rel. Aug. 22,
2016) (Notice).

radio communications products. The CAP AP oversees the P25 CAP program and makes

recommendations to DHS OIC to promote the P25 standard in communications equipment within the

public safety community.

The P25 CAP program tests communications equipment that claims to be compliant with P25

standards to ensure the equipment can work together regardless of supplier. The P25 CAP is a voluntary

program that allows suppliers to formally demonstrate their products' compliance with P25 standards.

Compliance testing is a formal, independent process that concludes with official summary test reports

and suppliers' declaration of compliance document being published by DHS OIC on the

www.dhs.gov/science-and-technology/p25-cap website.

The CAP AP will provide DHS OIC with federal, state, local, tribal and territorial perspectives on

portable, handheld, and vehicle mounted radios and infrastructure equipment. Through the P25 CAP AP,

OIC can support the collective interest of public safety organizations that procure and implement P25

compliant equipment.

The Commission's Rules Should Ensure Baseline Conventional Functionality and Interoperability of
Devices Operating on 700 MHz Interoperability Channels

The Commission asks for comment whether adopting the P25 CAP AP's list of 15 recommended

feature sets and capabilities would provide baseline interoperability 700 MHz interoperability channels

and help public safety users determine which equipment to purchase using federal grant funds.[3]

The CAP AP supports testing of specific features and capabilities to demonstrate baseline

interoperability for equipment operating on the 700 MHz interoperability channels, provided the

baseline does not go beyond the minimum features required by public safety users. Codifying the

baseline feature sets into the rules would provide a regulatory requirement to test for baseline

interoperability features for the 700 MHz interoperability channels.

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[3] Notice at paragraph 37.

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The Commission seeks comment on the most effective means to document whether a radio that operates on the 700 MHz narrowband interoperability channels with the referenced feature sets and capabilities would facilitate interoperable communications among public safety users.[4] The P25 CAP AP recommends that if a manufacturer makes use of the 'alternative method of testing' as noted in 90.548(b), then the manufacturer must submit an attestation document with the other FCC equipment documentation that is required for equipment authorization. The submitted attestation document would appear with the other equipment authorization documentation that is found on the FCC's website.[5] The attestation document would describe test case results for the referenced feature sets and capabilities as well as the procedure used by the manufacturer to validate the equipment for interoperability.

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[4] Notice at paragraph 38.
[5] Details of FCC Equipment Authorization can be found at the following link https://www.fcc.gov/engineering-technology/laboratory-division/general/equipment-authorization

P25 CAP AP Comments on Appendix C, New Rules for 90.548 Interoperability Technical Standards

CAP AP has reviewed the proposed 15 feature sets and capabilities in Appendix C[6] for which the Commission requested comments. The CAP AP notes that the proposed 15 features and capabilities were included in a filing made by the P25 CAP AP.[7] The CAP AP has further discussed and analyzed the proposed feature sets and capabilities. The P25 CAP AP recommendation will include references to Project 25/ TIA-102 Standards and the Project 25/TIA-102 Standard test cases to be used to validate the feature and capability. The format below restates the 15 features (in *italics*) provided by the Commission followed by the P25 CAP AP's discussion and recommended action.

90.548 Interoperability Technical Standards

90.548(d) Mobile and portable transceivers must at a minimum include the following feature sets and capabilities while operating in the conventional mode in order to be validated for compliance with the Project 25 standards.

P25 CAP AP Discussion:

Some of the 15 feature sets and capabilities include 'repeater' functionality as well as mobile and portable transceiver functionality. Repeater transceivers need to be noted as well.

The P25 CAP AP recommends the following replacement:

90.548(d) Mobile and portable transceivers and repeater transceivers must at a minimum include the following feature sets and capabilities while operating in the conventional mode in order to be validated for compliance with the Project 25 standards.

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[6] Notice at Appendix C.
[7] See *COMMENTS OF THE P25 COMPLIANCE ASSESSMENT PROGRAM ADVISORY PANEL* https://www.fcc.gov/ecfs/filing/60001388700/document/60001418597

90.548(d)(1) A subscriber unit must be capable of issuing an emergency alarm in a conventional system conforming to the following standard: TIA 102.BAAD-A Conventional Procedures, Section 4.2.2., released February 2010.

<u>P25 CAP AP Discussion:</u>

Upon further analysis, the P25 CAP AP no longer recommends emergency alarm as a required baseline 700 MHz interoperability channel feature. Subscriber emergency alarm is typically initiated by pressing a physical button on the subscriber. Although many public safety radios may have an emergency button, 700 MHz public service radios and other special purpose radio models may not have an emergency button. It was not the intention of the P25 CAP AP to require features beyond baseline interoperability features.

<u>The P25 CAP AP recommends removal from the list:</u>

The P25 CAP AP recommends the removal of the *90.548(d)(1)* requirement from the proposed list of 15 feature sets and capabilities.

90.548(d)(2) A subscriber unit must be capable of setting the emergency bit on all voice transmissions to notify units operating on the same channel that the user has declared an emergency situation conforming to the following standard: Project 25 Statement of Requirements, Section 2.1.2.25.1., released December 11, 2013.

<u>P25 CAP AP Discussion:</u>

Upon further analysis, the P25 CAP AP no longer recommends emergency call as a required baseline 700 MHz interoperability channel feature. The subscriber user typically initiates an emergency call by first pressing an emergency button and then the push-to-talk button. Although many public safety radios may have an emergency button, 700 MHz public service radios and other special purpose radio models may not have an emergency button or need the emergency call feature. It was not the intention of the P25 CAP AP to require features beyond baseline interoperability features.

<u>The P25 CAP AP recommends removal from the list:</u>

The P25 CAP AP recommends the removal of the *90.548(d)(2)* requirement from the proposed list of 15 feature sets and capabilities.

90.548(d)(3) A subscriber unit must conform to the unit and accessory mil-spec requirements in accordance with the following standard: Project 25 Statement of Requirements, Sections 1.3.3 through 1.3.3.5., released December 11, 2013.

P25 CAP AP Discussion:

Upon further analysis, the P25 CAP AP no longer recommends mil-spec requirements as required baseline 700 MHz interoperability channel features. 'Mil-Spec' requirements are defined, well-known environmental tests that simulate environmental conditions public safety radio will encounter. These test do not impact 700 MHz baseline interoperability though the P25 CAP AP believes these tests are recommended to validate equipment environmental 'operability'. It was not the intention of the P25 CAP AP to require features beyond baseline interoperability features.

The P25 CAP AP recommends removal from the list:

The P25 CAP AP recommends the removal of the *90.548(d)(3)* requirement from the proposed list of 15 feature sets and capabilities.

90.548(d)(4) A subscriber unit must be capable of issuing group calls in a conventional system in conformance with the following standard: Project 25 Statement of Requirements, Section 2.1.2.1., released December 11, 2013.

P25 CAP AP Discussion:

P25 Standard functionality for this feature is described in TIA-102.BAAD-B Conventional Procedures (2015). Test cases for compliance validation to Project 25 Standards are described in TIA-102.CABA Conventional Interoperability Tests (2010).

The P25 CAP AP recommends the following replacement:

90.548(d)(4) A subscriber unit must be capable of issuing group calls in a conventional system in conformance with the following standards: TIA 102.BAAD-B Conventional Procedures (2015), Section 6.1 with validation testing according to TIA-102.CABA Interoperability Testing for Voice Operation in Conventional Systems (2010), Test Case 2.2.2.4.1, Test Case 2.4.2.4.1, Test Case 2.6.2.4.1.

90.548(d)(5) A subscriber unit must be capable of issuing private calls in a conventional system in conformance with the following standard: Project 25 Statement of Requirements, Section 2.1.2.3., released December 11, 2013.

P25 CAP AP Discussion:

Upon further analysis, the P25 CAP AP no longer recommends private call as a required baseline 700 MHz interoperability channel feature. The subscriber user initiates a private call using a display and keypad on the subscriber. Although many public safety radios may have a subscriber display and keypad, 700 MHz public service radios and other special purpose radio models may not have a subscriber display and keypad. Without a subscriber display and keypad, the private call feature cannot be supported. It was not the intention of the P25 CAP AP to require features beyond baseline interoperability features.

The P25 CAP AP recommends removal from the list:

The P25 CAP AP recommends the removal of the *90.548(d)(5)* requirement from the proposed list of 15 feature sets and capabilities.

90.548(d)(6) The three Project 25 standard squelch modes must be supported in conformance with the following standard: Project 25 Statement of Requirements, Section 2.1.2.30, as effective on December 11, 2013.

P25 CAP AP Discussion:

P25 Standard functionality for this feature is described in TIA-102.BAAD-B Conventional Procedures (2015). The P25 CAP AP recommends that the 'Selective Squelch' feature be removed from the validation testing. This feature works most effectively with a subscriber display which the P25 CAP AP does not believe to be a required as noted in *90.548(d)(5)*. The P25 CAP AP no longer recommends Selective Squelch as a required baseline 700 MHz interoperability channel feature. Test validation is still recommended for Monitor Squelch and Normal Squelch. Test cases for compliance validation to Project 25 Standards are described in TIA-102.CABA Conventional Interoperability Tests (2010).

The P25 CAP AP recommends the following replacement:

90.548(d)(6) Two Project 25 standard squelch modes, Monitor Squelch and Normal Squelch, must be supported in conformance with the following standards: TIA 102.BAAD-B Conventional Procedures (2015), Section 6.1.1.3 with validation testing in according to TIA-102.CABA

Conventional Interoperability Testing for Voice Operation in Conventional Systems (2010), Test Case 2.2.3.4.1, Test Case 2.2.1.4.1 (Direct, normal squelch), Test Case 2.4.9.4.1 (Repeated, monitor squelch), Test Case 2.4.1.4.1 (Repeated, normal squelch).

90.548(d)(7) A subscriber unit must properly implement the special "Reserved" conventional network access code (NAC) and talkgroup in conformance with the following standard: TIA TSB-102.CABA, released October 2010.

<u>P25 CAP AP Discussion:</u>

The P25 Standard functionality for this feature is described in TIA-102.BAAD-B Conventional Procedures (2015). Test cases for compliance validation to Project 25 Standards are described in TIA-102.CABA Conventional Interoperability Tests (2010).

<u>The P25 CAP AP recommends the following replacement:</u>

90.548(d)(7) A subscriber unit must properly implement conventional network access codes values (NAC) of $293 and $F7E in conformance with the following standards: TIA-102.BAAC-C Common Air Interface Reserved Values (2011), Section 2.1 with validation testing according to TIA-102.CABA Interoperability Testing for Voice Operation in Conventional Systems (2010), Test Case 2.2.1.4.1 and Test Case 2.2.8.1.

90.548(d)(8) A subscriber unit must include "No Call" Talk Group ($0000) and "All Call" Talk Group ($FFFF) in conformance with the following standard: Project 25 Statement of Requirements, Section 2.1.2.34., released December 11, 2013.

<u>P25 CAP AP Discussion:</u>

Upon further analysis, the P25 CAP AP no longer recommends 'No Call' and 'All Call' as required baseline 700 MHz interoperability channel features. The P25 CAP AP finds there are no P25 Standard test cases to validate "No Call' compliance to P25 Standards. The P25 CAP AP finds that 'All Call' is not a required baseline interoperability feature as it would require the use of selective squelch. The P25 CAP AP previously noted in *90.548(d)(6)* that selective squelch was not a baseline interoperability feature.

<u>The P25 CAP AP recommends removal from the list:</u>

The P25 CAP AP recommends the removal of the *90.548(d)(8)* requirement from the proposed list of 15 feature sets and capabilities.

90.548(d)(9) A subscriber unit must be able to transmit and receive the appropriate status symbols to indicate that a channel is busy in both direct and repeater mode in conformance with the following standard: TIA TSB-102.CABA, released October 2010.

P25 CAP AP Discussion:

Upon further analysis, The CAP AP finds there are no P25 Standard test cases to validate the compliance to P25 Standards. The P25 CAP AP recommends that Subscriber Status Symbol capability be removed from the 15 Feature sets and capabilities due to the lack of a P25 Standard method to validate the feature.

The P25 CAP AP recommends removal from the list:

The P25 CAP AP recommends the removal of the *90.548(d)(9)* requirement from the proposed list of 15 feature sets and capabilities.

90.548(d)(10) A subscriber unit must be compatible with C4FM and CQPSK Modulation in conformance with the following standard: TIA TSB-102.CABA, released December 11, 2013.

P25 CAP AP Discussion:

Upon further analysis, The CAP AP finds that P25 Standards that describe 'C4FM' and 'CQPSK' are already noted in 90.548(a) Interoperability Technical Standards and do not require further validation testing. The C4FM modulation is used for all the interoperability feature sets. The addition of a specific test of the basic P25 12.5kHz modulation is not needed. CQPSK is defined for P25 6.25kHz linear FDMA operation. P25 6.25kHz FDMA operation is not defined for use on 700 MHz interoperability channels and therefore validation testing is not required.

The P25 CAP AP recommends removal from the list:

The P25 CAP AP recommends the removal of the *90.548(d)(10)* requirement from the proposed list of 15 feature sets and capabilities.

90.548(d)(11) A fixed conventional repeater must be able to repeat the correct/matching network access code (NAC) for all subscriber call types (clear and encrypted) using the same output NAC in conformance with the following standard: TIA TSB-102.CABA, released December 11, 2013.

<u>P25 CAP AP Discussion:</u>

The P25 Standard functionality for this feature is described in TIA-102.BAAD-B Conventional Procedures (2015). Test cases for compliance validation to Project 25 Standards are described in TIA-102.CABA Conventional Interoperability Tests (2010).

<u>The P25 CAP AP recommends the following replacement text:</u>

90.548(d)(11) *A fixed conventional repeater must be able to repeat the correct/matching network access code (NAC) for all subscriber call types (clear and encrypted) using the same output NAC in conformance with the following standards: TIA 102.BAAD-B Conventional Procedures (2015), Section 2.5 with validation testing according to TIA-102.CABA Interoperability Testing for Voice Operation in Conventional Systems (2010), Test Case 2.4.1.4.1, Test Case 2.4.2.4.1, Test Case 2.4.10.4.1 and Test Case 2.4.10.4.2.*

90.548(d)(12) A fixed conventional repeater must be able to repeat the correct/matching network access code (NAC) for all subscriber call types (clear and encrypted) using a different output NAC in conformance with the following standard: TIA TSB-102.CABA, released December 11, 2013.

<u>P25 CAP AP Discussion:</u>

The P25 Standard functionality for this feature is described in TIA-102.BAAD-B Conventional Procedures (2015). Test cases for compliance validation to Project 25 Standards are described in TIA-102.CABA Conventional Interoperability Tests (2010).

<u>The P25 CAP AP recommends the following replacement text:</u>

90.548(d)(12) A fixed conventional repeater must be able to repeat the correct/matching network access code (NAC) for all subscriber call types (clear and encrypted) using a different output NAC in conformance with the following standards: TIA 102.BAAD-B Conventional Procedures (2015), Section 2.5 with validation testing according to TIA-102.CABA Interoperability Testing for Voice Operation in Conventional Systems (2010), Test Case 2.4.3.4.1 and Test Case 2.4.4.4.1.

90.548(d)(13) A fixed conventional repeater must be able to reject (no repeat) all input transmissions with incorrect network access code (NAC) in conformance with the following standard; TIA TSB-102.CABA, released December 11, 2013.

<u>P25 CAP AP Discussion:</u>

The P25 Standard functionality for this feature is described in TIA-102.BAAD-B Conventional Procedures (2015). Test cases for compliance validation to Project 25 Standards are described in TIA-102.CABA Conventional Interoperability Tests (2010).

<u>The P25 CAP AP recommends replacing *(13)* with the following:</u>

90.548(d)(13) A fixed conventional repeater must be able to reject (no repeat) all input transmissions with incorrect network access code (NAC) in conformance with the following standard: TIA 102.BAAD-B Conventional Procedures (2015), Section 2.5 with validation testing according to TIA-102.CABA Interoperability Testing for Voice Operation in Conventional Systems (2010), Test Case 2.4.1.4.1, Test Case 2.4.2.4.1, Test Case 2.4.11.4.1 and Test Case 2.4.11.4.2.

90.548(d)(14) A fixed conventional repeater must be able to support the correct status symbol indicating when an input channel is busy in conformance with the following standard: TIA TSB-102.CABA, released December 11, 2013.

<u>P25 CAP AP Discussion:</u>

Upon further analysis, The CAP AP finds there are no P25 Standard test cases to validate status symbol compliance to P25 Standards. The P25 CAP AP recommends that Repeater Status Symbol capability be removed from the 15 Feature sets and capabilities due to the lack of a P25 Standard method to validate the feature.

<u>The P25 CAP AP recommends Removal:</u>

The P25 CAP AP recommends the removal of the *90.548(d)(14)* requirement from the proposed list of 15 feature sets and capabilities.

90.548(d)(15) A fixed conventional repeater must be able to support the correct implementation of special reserved network access code (NAC) values $293, $F7E, and $F7F in conformance with the following standard: TIA TSB-102.CABA, released December 11, 2013.

<u>P25 CAP AP Discussion:</u>

The P25 Standard functionality for this feature is described in TIA-102.BAAD-B Conventional Procedures (2015). Test cases for compliance validation to Project 25 Standards are described in TIA-102.CABA Conventional Interoperability Tests (2010).

<u>The P25 CAP AP recommends replacing *(15)* with the following:</u>

90.548(d)(15) *A fixed conventional repeater must be able to support the correct implementation of network access code (NAC) values $F7E and $F7F in conformance with the following standards: TIA 102.BAAD-B Conventional Procedures (2015), Section 2.5 with validation testing according to TIA-102.CABA Interoperability Testing for Voice Operation in Conventional Systems (2010), Test Case 2.4.5.4.1, Test Case 2.4.6.4.1, Test Case 2.4.7.4.1, Test Case 2.4.10.4.3 and Test Case 2.4.10.4.4.*

<u>Summary of P25 CAP AP recommendations for 90.548 Interoperability Technical Standards</u>

(d) Mobile and portable transceivers and repeater transceivers must at a minimum include the following feature sets and capabilities while operating in the conventional mode in order to be validated for compliance with the Project 25 standards.

(1) Remove

(2) Remove

(3) Remove

(4) A subscriber unit must be capable of issuing group calls in a conventional system in conformance with the following standards: TIA 102.BAAD-B Conventional Procedures (2015), Section 6.1 with validation testing according to TIA-102.CABA Interoperability Testing for Voice Operation in Conventional Systems (2010), Test Case 2.2.2.4.1, Test Case 2.4.2.4.1, Test Case 2.6.2.4.1.

(5) Remove

(6) Two Project 25 standard squelch modes, Monitor Squelch and Normal Squelch, must be supported in conformance with the following standards: TIA 102.BAAD-B Conventional Procedures (2015), Section 6.1.1.3 with validation testing in according to TIA-102.CABA Conventional Interoperability

Testing for Voice Operation in Conventional Systems (2010), Test Case 2.2.3.4.1, Test Case 2.2.1.4.1 (Direct, normal squelch), Test Case 2.4.9.4.1 (Repeated, monitor squelch), Test Case 2.4.1.4.1 (Repeated, normal squelch).

(7) A subscriber unit must properly implement the conventional network access codes values (NAC) of $293 and $F7E in conformance with the following standards: TIA-102.BAAC-C Common Air Interface Reserved Values (2011), Section 2.1 with validation testing according to TIA-102.CABA Interoperability Testing for Voice Operation in Conventional Systems (2010), Test Case 2.2.1.4.1 and Test Case 2.2.8.1.

(8) Remove

(9) Remove

(10) Remove

(11) A fixed conventional repeater must be able to repeat the correct/matching network access code (NAC) for all subscriber call types (clear and encrypted) using the same output NAC in conformance with the following standards: TIA 102.BAAD-B Conventional Procedures (2015), Section 2.5 with validation testing according to TIA-102.CABA Interoperability Testing for Voice Operation in Conventional Systems (2010), Test Case 2.4.1.4.1, Test Case 2.4.2.4.1, Test Case 2.4.10.4.1 and Test Case 2.4.10.4.2.

(12) A fixed conventional repeater must be able to repeat the correct/matching network access code (NAC) for all subscriber call types (clear and encrypted) using a different output NAC in conformance with the following standards: TIA 102.BAAD-B Conventional Procedures (2015), Section 2.5 with validation testing according to TIA-102.CABA Interoperability Testing for Voice Operation in Conventional Systems (2010), Test Case 2.4.3.4.1 and Test Case 2.4.4.4.1.

(13) A fixed conventional repeater must be able to reject (no repeat) all input transmissions with incorrect network access code (NAC) in conformance with the following standard: TIA 102.BAAD-B Conventional Procedures (2015), Section 2.5 with validation testing according to TIA-102.CABA Interoperability Testing for Voice Operation in Conventional Systems (2010), Test Case 2.4.1.4.1, Test Case 2.4.2.4.1, Test Case 2.4.11.4.1 and Test Case 2.4.11.4.2.

(14) Remove

(15) A fixed conventional repeater must be able to support the correct implementation of network access code (NAC) values $F7E and $F7F in conformance with the following standards: TIA 102.BAAD-B Conventional Procedures (2015), Section 2.5 with validation testing according to TIA-102.CABA Interoperability Testing for Voice Operation in Conventional Systems (2010), Test Case 2.4.5.4.1, Test Case 2.4.6.4.1, Test Case 2.4.7.4.1, Test Case 2.4.10.4.3 and Test Case 2.4.10.4.4.

Conclusion

      P25 CAP AP believes testing of its baseline features recommended for inclusion in 90.548(d) is required for equipment that is capable of operating on the 700 MHz interoperability channels. Once this requirement exists, equipment interoperability for the 700 MHz interoperability channels is a known and tested quantity, not just of the P25 conventional radio interface, but also for a baseline set of Project 25 features and capabilities before P25 equipment is acquired and put into use.

      Respectfully submitted,

      Christopher H Wilson, Executive Secretariat

      P25 Compliance Assessment Program Advisory Panel

October 26, 2016